Toplam Sembolü:

$$\sum_{k=1}^{n} a_k = a_1+a_2+a_3+\dots+a_n$$

Kural: $\sum_{k=1}^{n} k = 1+2+3+\dots+n = \frac{n.(n+1)}{2}$

örnek: $\sum_{k=1}^{5} k = \frac{5.6}{2} = 15$

Kural: $\sum_{k=p}^{n} c.a_k = c.\sum_{k=p}^{n} a_k$

örnek: $\sum_{k=1}^{5} 4k = 4\sum_{k=1}^{5} k = 4.\frac{5.6}{2} = 60$

Kural: $\sum_{k=1}^{n} c = \underbrace{c+c+\dots+c}_{n \text{ tane}} = n.c$

örnek: $\sum_{k=1}^{7} 4 = 7.4 = 28$

Kural: $\sum_{k=1}^{n} (a_k+b_k-c_k) = \sum_{k=1}^{n} a_k + \sum_{k=1}^{n} b_k - \sum_{k=1}^{n} c_k$

örnek: $\sum_{k=1}^{10}(10k+3) = 10.\sum_{k=1}^{10} k + \sum_{k=1}^{10} 3 = 10.\frac{10.11}{2} + 10.3$

$= 580$

Kural: $\sum_{k=p}^{n} a_k = \sum_{k=p-r}^{n-r} a_{k+r}$

$\sum_{k=p}^{n} a_k = \sum_{k=p+r}^{n+r} a_{k-r}$

örnek: $\sum_{k=5}^{12} k = \sum_{k=5-4}^{12-4} (k+4) = \sum_{k=1}^{8} k+4$

$= \sum_{k=1}^{8} k + \sum_{k=1}^{8} 4 = \frac{8.9}{2} + 8.4 = 68$

örnek: $\sum_{k=-4}^{5} (2k-5) = \sum_{k=-4+5}^{5+5} [2(k-5)-5]$

$= \sum_{k=1}^{10} (2k-15) = 2\sum_{k=1}^{10} k - \sum_{k=1}^{10} 15$

$= \cancel{2}.\frac{10.11}{\cancel{2}} - 10.15 = 110-150 = -40$

Kural: $\sum_{k=1}^{n} k^2 = 1^2+2^2+\dots+n^2 = \frac{n.(n+1).(2n+1)}{6}$

örnek: $\sum_{k=3}^{7} k^2 = \sum_{k=3-2}^{7-2} (k+2)^2 = \sum_{k=1}^{5} k^2+4k+4$

$= \sum_{k=1}^{5} k^2 + 4\sum_{k=1}^{5} k + \sum_{k=1}^{5} 4 = \frac{5.\cancel{6}.11}{\cancel{6}} + \overset{2}{\cancel{4}}.\frac{5.6}{\cancel{2}} + 5.4$

$= 55+60+20 = 135$

Kural: $\sum_{k=1}^{n} k^3 = 1^3+2^3+\dots+n^3 = \left[\frac{n.(n+1)}{2}\right]^2$

örnek: $\sum_{k=1}^{4} k^3 = \left[\frac{4.5}{2}\right]^2 = 100$

Kural: $\sum_{k=0}^{n} r^k = 1+r+r^2+\dots+r^n = \frac{r^{n+1}-1}{r-1}$

örnek: $\sum_{k=0}^{20} 2^k = 1+2+2^2+\dots+2^{20} = \frac{2^{21}-1}{2-1} = 2^{21}-1$

Kural: $\sum_{k=1}^{n} k.k! = 1.1!+2.2!+\dots+n.n! = (n+1)!-1$

örnek: $\sum_{k=3}^{14} k.k! = 3.3!+4.4!+\dots+14.14!$

$= \underbrace{(1.1!+2.2!)+3.3!+4.4!+\dots+14.14!}_{(15!-1)} - \underbrace{(1.1!+2.2!)}_{(3!-1)}$

$= 15!-3!$

Basit Kesirlere Ayırma:

$$\frac{1}{k.(k+1)} = \frac{A}{\underset{(k+1)}{k}} + \frac{B}{\underset{(k)}{k+1}}, \quad 1 = A(k+1)+Bk$$

$k=0$ ise $A=1$

$k=-1$ ise $B=-1$

$$* \boxed{\frac{1}{k.(k+1)} = \frac{1}{k} - \frac{1}{k+1}}$$

Kural: Paydadaki çarpanlardan küçük olanı A nın, büyük olanı B nin altına yazılır. Buna göre,

çarpanlar arasındaki fark:

→ 1 ise $A=1$, $B=-1$

→ 2 ise $A=\frac{1}{2}$, $B=-\frac{1}{2}$

→ 3 ise $A=\frac{1}{3}$, $B=-\frac{1}{3}$

⋮

örnek: $\sum_{k=1}^{7} \frac{1}{k(k+1)} = \sum_{k=1}^{7} \frac{1}{k} - \frac{1}{k+1}$

$$= \left.\begin{matrix} \frac{1}{1} - \cancel{\frac{1}{2}} \\ \cancel{\frac{1}{2}} - \cancel{\frac{1}{3}} \\ \vdots \\ \cancel{\frac{1}{7}} - \frac{1}{8} \end{matrix}\right\} = \frac{1}{\underset{(8)}{1}} - \frac{1}{8} = \frac{7}{8}$$

örnek: $\sum_{k=1}^{5} \frac{6}{k(k+2)} = 6\sum_{k=1}^{5} \frac{1}{2}\left(\frac{1}{k} - \frac{1}{k+2}\right)$

$$= 3\underbrace{\sum_{k=1}^{5} \frac{1}{k} - \frac{1}{k+2}}_{} \Rightarrow \begin{matrix} \frac{1}{1} - \cancel{\frac{1}{3}} \\ \frac{1}{2} - \cancel{\frac{1}{4}} \\ \cancel{\frac{1}{3}} - \cancel{\frac{1}{5}} \\ \cancel{\frac{1}{4}} - \frac{1}{6} \\ + \;\; \cancel{\frac{1}{5}} - \frac{1}{7} \\ \hline \left(\frac{1}{\underset{(2)}{1}} + \frac{1}{2}\right) - \left(\frac{1}{\underset{7}{6}} + \frac{1}{\underset{6}{7}}\right) \end{matrix}$$

$$= 3.\left(\frac{3}{2} - \frac{13}{42}\right)$$

$$= \frac{9}{\underset{(7)}{2}} - \frac{13}{14}$$

$$= \frac{63-13}{14} = \frac{50}{14} = \frac{25}{7}$$

Alıştırmalar:

1) $\sum_{k=3}^{14} 3 = \sum_{k=1}^{12} 3 = 3.12 = 36$

2) $\sum_{k=1}^{40} 2n = 40.2n = 80n$

3) $\sum_{k=1}^{n+7} \frac{1983}{n+7} = \cancel{n+7}.\frac{1983}{\cancel{n+7}} = 1983$

4) $\sum_{k=1}^{n} 4n = 64$ ise $\sum_{k=1}^{n+2} (n+3) = ?$

Çözüm! $4n.n=64$, $n=4$

$$\sum_{k=1}^{n+2} (n+3) = \sum_{k=1}^{6} 7 = 42$$

5) $\sum_{k=-3}^{5} 10 = \sum_{k=1}^{9} 10 = 90$

6) $\sum_{k=1}^{10} 4k = 4\sum_{k=1}^{10} k = \overset{2}{\cancel{4}}.\frac{10.11}{\cancel{2}} = 220$

7) $\sum_{k=1}^{8} 2k^2 = 2\sum_{k=1}^{8} k^2 = \cancel{2}.\frac{8.\overset{3}{\cancel{9}}.17}{\cancel{6}_3} = 408$

8) $\sum_{n=1}^{20} (n+2) = \sum_{n=1}^{20} n + \sum_{n=1}^{20} 2 = \frac{20.21}{2} + 20.2$

$$= 250$$

9) $\sum_{n=1}^{20} (2+na) = 70$ ise $a = ?$

Çözüm! $\sum_{n=1}^{20} 2 + a.\sum_{n=1}^{20} n = 70$

$20.2 + a.\frac{20.21}{2} = 70$, $\quad a.1\cancel{0}.21 = 3\cancel{0}$

$$a = \frac{1}{7}$$

#cyhnyvz#

10) $\sum_{k=1}^{5}(k^2-3k+6)=?$

Çözüm! $\sum_{k=1}^{5}k^2-3\sum_{k=1}^{5}k+\sum_{k=1}^{5}6$

$=\frac{5.\cancel{6}.11}{\cancel{6}}-3.\frac{5.\cancel{6}^{3}}{\cancel{2}}+5.6=55-45+30=40$

11) $\sum_{k=1}^{10}k.(k+1)=?$

Çözüm! $\sum_{k=1}^{10}k^2+k=\sum_{k=1}^{10}k^2+\sum_{k=1}^{10}k$

$=\frac{10.11.21}{6}+\frac{10.11}{2}=385+55=440$

12) $\sum_{k=1}^{12}(k+2).(k-1)=?$

Çözüm! $\sum_{k=1}^{12}k^2+k-2=\sum_{k=1}^{12}k^2+\sum_{k=1}^{12}k-\sum_{k=1}^{12}2$

$=\frac{\cancel{12}^{2}.13.25}{\cancel{6}}+\frac{12.13}{2}-12.2=650+78-24=704$

13) $\sum_{k=1}^{20}2^k=?$

Çözüm! $2+2^2+----+2^{20}=2(1+2+----+2^{19})$

$=2.\frac{2^{20}-1}{\cancel{2-1}_{1}}=2^{21}-2$

14) $\sum_{k=1}^{24}3^{k+2}=?$

Çözüm! $3^3+3^4+----+3^{26}=3^3(1+3+3^2+---+3^{23})$

$=27.\frac{3^{24}-1}{3-1}=\frac{27}{2}.(3^{24}-1)$

15) $\sum_{k=3}^{15}(k-2)=?$

Çözüm! $\sum_{k=1}^{13}k=\frac{13.\cancel{14}^{7}}{\cancel{2}}=91$

16) $\sum_{k=-4}^{7}(2k+6)=?$

Çözüm! $\sum_{k=1}^{12}(2(k-5)+6)=\sum_{k=1}^{12}2k-4$

$=2\sum_{k=1}^{12}k-\sum_{k=1}^{12}4=\cancel{2}.\frac{12.13}{\cancel{2}}-12.4=156-48$
$=108$

17) $\sum_{k=5}^{13}(4k+2)=?$

Çözüm! $\sum_{k=1}^{9}(4(k+4)+2)=\sum_{k=1}^{9}(4k+18)$

$=4\sum_{k=1}^{9}k+\sum_{k=1}^{9}18=4.\frac{9.10}{2}+9.18=180+162$
$=342$

18) $a_n=\sum_{k=1}^{n}\frac{1}{k.(k+1)}$ ise $a_{99}=?$

Çözüm! $a_{99}=\sum_{k=1}^{99}\frac{1}{k}-\frac{1}{k+1}=\frac{1}{1}-\frac{1}{100}=\frac{99}{100}$

19) $\sum_{k=1}^{20}\frac{1}{k^2+3k+2}=?$

Çözüm! $\sum_{k=1}^{20}\frac{1}{(k+1)(k+2)}=\sum_{k=1}^{20}\frac{1}{k+1}-\frac{1}{k+2}$

$=\frac{1}{1+1}-\frac{1}{20+2}=\frac{1}{\underset{(11)}{2}}-\frac{1}{22}=\frac{10}{22}=\frac{5}{11}$

20) $\sum_{k=4}^{50}\frac{1}{k^2-5k+6}=?$

Çözüm! $\sum_{k=4}^{50}\frac{1}{(k-3)(k-2)}=\sum_{k=4}^{50}\frac{1}{k-3}-\frac{1}{k-2}$

$=\frac{1}{4-3}-\frac{1}{50-2}=\frac{1}{\underset{(48)}{1}}-\frac{1}{48}=\frac{47}{48}$

#cyhnyvz#

21) $\sum_{k=3}^{20} (k+1).(k+1)! = ?$

Çözüm! $4.4!+5.5!+...+21.21!$

$= \underbrace{(1.1!+2.2!+3.3!)+4.4!+5.5!+...+21.21!}_{(22!-1)} - \underbrace{(1.1!+...+3.3!)}_{(4!-1)}$

$= 22!-4!$

22) $\sum_{p=1}^{n} p.(p+1) = \frac{n.(n^2+an+b)}{3}$ ise $2a+b=?$

Çözüm! $\sum_{p=1}^{n} p^2+p = \sum_{p=1}^{n} p^2 + \sum_{p=1}^{n} p$

$\Rightarrow \frac{\cancel{n}.(n+1).(2n+1)}{6} + \frac{\cancel{n}.(n+1)}{\underset{(3)}{2}} = \frac{\cancel{n}.(n^2+an+b)}{\underset{(2)}{3}}$

$\frac{2n^2+3n+1+3n+3}{\cancel{6}} = \frac{2n^2+2an+2b}{\cancel{6}}$

$2n^2+6n+4 = 2n^2+2an+2b$

$a=3, \quad b=2 \quad , \quad 2a+b = 2.3+2 = 8$

Kural: $\sum_{k=1}^{n} a_k = \sum_{k=1}^{p} a_k + \sum_{k=p+1}^{n} a_k$

örnek: $\sum_{k=1}^{20} a_k = \sum_{k=1}^{8} a_k + \sum_{k=9}^{20} a_k$

23) $\sum_{k=1}^{30} a_k = 120$ ve $\sum_{k=1}^{12} a_k = 24$ ise $\sum_{k=13}^{30} a_k = ?$

Çözüm!

$\underbrace{\sum_{k=1}^{30} a_k}_{120} = \underbrace{\sum_{k=1}^{12} a_k}_{24} + \underbrace{\sum_{k=13}^{30} a_k}_{x} \quad , \quad x = 96$

24) $\sum_{k=1}^{48} (\sqrt{k+1}-\sqrt{k}) = ?$

Çözüm!
$\cancel{\sqrt{2}}-\sqrt{1}$
$\cancel{\sqrt{3}}-\cancel{\sqrt{2}}$
$\cancel{\sqrt{4}}-\cancel{\sqrt{3}}$
$\vdots$
$\sqrt{49}-\cancel{\sqrt{48}}$

$\sqrt{49}-\sqrt{1} = 7-1 = 6$

25) $\sum_{k=1}^{24} (\sqrt{2k+1}-\sqrt{2k-1}) = ?$

Çözüm!
$\cancel{\sqrt{3}}-\sqrt{1}$
$\cancel{\sqrt{5}}-\cancel{\sqrt{3}}$
$\cancel{\sqrt{7}}-\cancel{\sqrt{5}}$
$\vdots$
$\sqrt{49}-\cancel{\sqrt{47}}$

$\sqrt{49}-\sqrt{1} = 7-1 = 6$

26) $x^2-3x-1=0$ denkleminin kökleri x_1 ve x_2 dir. Buna göre,

$\sum_{k=1}^{2} 5x_k = ?$

Çözüm! $x^2-3x-1=0, \quad x_1+x_2 = -\frac{b}{a} \quad , \quad x_1+x_2 = 3$

$\sum_{k=1}^{2} 5x_k = 5x_1+5x_2 = 5(x_1+x_2) = 15$

27) $\sum_{p=0}^{80} i^p = ?$

Çözüm! $\underbrace{i^0+i^1+i^2+....+i^{80}}_{0} = i^0 = 1$

28) $\sum_{n=1}^{4} \sum_{m=2}^{3} (m^2n-6n) = ?$

Çözüm! $\sum_{n=1}^{4} \underbrace{(4n-6n)}_{-2n} + \underbrace{(9n-6n)}_{3n} = \sum_{n=1}^{4} n$

$= \frac{4.5}{2} = 10$

29) $\sum_{k=1}^{4}\sum_{s=1}^{2}(4s-2k+1)=?$

Çözüm! $\sum_{k=1}^{4}(5-2k)+(9-2k)=\sum_{k=1}^{4}14-4k$

$=\sum_{k=1}^{4}14-4\sum_{k=1}^{4}k=14.4-4.\frac{4.5}{2}=56-40=16$

30) $\sum_{j=1}^{4}\sum_{i=0}^{3}(3i-2j+1)=?$

Çözüm! $\sum_{j=1}^{4}(-2j+1)+(4-2j)+(7-2j)+(10-2j)$

$=\sum_{j=1}^{4}22-8j=\sum_{j=1}^{4}22-8\sum_{j=1}^{4}j=4.22-8.\frac{4.5}{2}$

$=88-80=8$

31) $f(x)=3x+1,\quad x_1=1,\quad x_2=4$ ise

$\sum_{i=1}^{2}(x_i-3).f(x_i)=?$

Çözüm! $(x_1-3).f(x_1)+(x_2-3).f(x_2)$, $x_1 = 1$, $x_2 = 4$

$-2.f(1)+1.f(4)=-8+13=5$

32) $\sum_{k=1}^{30}(-1)^k.(k+1)=?$

Çözüm! $\underbrace{-2+3}_{1}\underbrace{-4+5}_{1}\dots\underbrace{-30+31}_{1}=15$

33) $\sum_{k=1}^{45}(-1)^k.(k+1)=?$

Çözüm! $\underbrace{\overbrace{-2+3}^{1}\overbrace{-4+5}^{1}\dots\overbrace{-44+45}^{1}}_{22}-46$

$22-46=-24$

34) $\sum_{p=1}^{40}\log_3\left(\frac{p+5}{p+4}\right)=?$

Çözüm! $\log_3\left(\frac{6}{5}\right)+\log_3\left(\frac{7}{6}\right)+\dots+\log_3\left(\frac{45}{44}\right)$

$=\log_3\left(\frac{\cancel{6}}{5}\cdot\frac{\cancel{7}}{\cancel{6}}\cdot\frac{\cancel{8}}{\cancel{7}}\cdots\frac{45}{\cancel{44}}\right)=\log_3\left(\frac{45}{5}\right)=\log_3 9=2$

35) $\sum_{k=1}^{90}\cos^2 k=?$

Çözüm!

$\cos^2 1+\cos^2 2+\cos^2 3+\dots+\cos^2 88+\cos^2 89+\cos^2 90$

$=\cos^2 1+\cos^2 2+\dots+\cos^2 44+\cos^2 45+\sin^2 44+\dots+\sin^2 1+0$

$=\underbrace{1+1+1+\dots+1}_{44\text{ tane}}+\cos^2 45+0=44+\frac{1}{2}=\frac{89}{2}$

S_n: ilk n terimin toplamı:

$S_n=\sum_{k=1}^{n}a_k=a_1+a_2+\dots+a_n$

$S_1=a_1$

$S_2=a_1+a_2$

$S_3=a_1+a_2+a_3$

$\vdots$

$S_n=S_{n-1}+a_n\rightarrow\boxed{a_n=S_n-S_{n-1}}$

$a_7=S_7-S_6$

$a_5=S_5-S_4$

36) İlk n terimin toplamı $S_n=\sum_{k=1}^{n}a_k=n^2+2n+10$ olan dizinin 6. terimi kaçtır?

Çözüm!

$a_6=S_6-S_5$

$=(6^2+6.2+10)-(5^2+2.5+10)$

$=58-45$

$=13$

Çarpım Sembolü:

$$\prod_{k=1}^{n} a_k = a_1 . a_2 \ldots a_n$$

Kural:

$$\prod_{k=1}^{n} k = 1.2.3 \ldots n = n!$$

$$\prod_{k=1}^{8} k = 8!$$

Örnek: $\prod_{k=7}^{20} k = 7.8.9 \ldots 20 = \frac{1.2 \ldots 6.7.8 \ldots 20}{1.2 \ldots 6}$

$$= \frac{20!}{6!}$$

Kural:

$$\prod_{k=1}^{n} a = \underbrace{a.a \ldots a}_{n \text{ tane}} = a^n$$

$$\prod_{k=1}^{10} 3 = 3^{10}$$

Kural:

$$\prod_{k=1}^{n} a.k = a^n . \prod_{k=1}^{n} k$$

$$\prod_{k=1}^{12} 3k = 3^{12} \prod_{k=1}^{12} k = 3^{12} . 12!$$

Örnek: $\prod_{k=5}^{10} 4 = \prod_{k=5-4}^{10-4} 4 = \prod_{k=1}^{6} 4 = 4^6$

37) $\prod_{n=5}^{12} \sum_{k=1}^{n} \frac{1}{k.(k+1)} = ?$

Çözüm: $\prod_{n=5}^{12} \frac{n}{n+1} = \frac{5}{\cancel{6}} . \frac{\cancel{6}}{\cancel{7}} . \frac{\cancel{7}}{\cancel{8}} \ldots \frac{\cancel{12}}{13} = \frac{5}{13}$

38) $\sum_{n=1}^{10} \prod_{m=2}^{8} (mn - 3n) = ?$

Çözüm: $\sum_{n=1}^{10} \underbrace{\prod_{m=2}^{8} (mn-3n)}_{(-n).0 \ldots = 0} = \sum_{n=1}^{10} 0 = 0$

39) $\prod_{k=1}^{45} (k^2 - 2k - 15) = ?$

Çözüm: $\prod_{k=1}^{45} (k-5).(k+3) = 0 \ldots = 0$

40) $\prod_{k=2}^{3} \prod_{n=1}^{4} k = ?$

Çözüm: $\prod_{k=2}^{3} k^4 = 2^4 . 3^4 = 6^4$

41) $\prod_{k=1}^{n} 2^k = 2^{21}$ ise n kaçtır?

Çözüm: $2^1 . 2^2 \ldots 2^n = 2^{21}$

$2^{1+2+\ldots+n} = 2^{21}$, $\frac{n(n+1)}{2} = 21$, $n(n+1) = 42$

$n = 6$

$\cancel{n = -7}$

42) $\prod_{k=50}^{130} \cos k = ?$

Çözüm:

$\cos 50 . \cos 51 \ldots \underbrace{\cos 90}_{0} \ldots \cos 130 = 0$

43) $\prod_{k=2}^{60} \frac{k^2+2k-3}{k^2+3k-4} = ?$

Çözüm:

$$\prod_{k=2}^{60} \frac{(k+3).\cancel{(k-1)}}{(k+4).\cancel{(k-1)}} = \frac{5}{\cancel{6}}.\frac{\cancel{6}}{\cancel{7}}.\frac{\cancel{7}}{\cancel{8}}\cdots\frac{\cancel{63}}{64} = \frac{5}{64}$$

44) $\prod_{k=4}^{40} \left(1+\frac{2k+1}{k^2}\right) = ?$

Çözüm:

$$\prod_{k=4}^{40} \frac{(k+1)^2}{k^2} = \frac{\cancel{5^2}}{4^2}.\frac{\cancel{6^2}}{\cancel{5^2}}.\frac{\cancel{7^2}}{\cancel{6^2}}\cdots\frac{41^2}{\cancel{40^2}} = \frac{1681}{16}$$

45) $\prod_{k=4}^{30} \left(1-\frac{1}{k^2}\right) = ?$

Çözüm:

$$\prod_{k=4}^{30} \frac{k^2-1}{k^2} = \prod_{k=4}^{30} \frac{(k-1)}{k}.\frac{(k+1)}{k}$$

$$= \left(\frac{3}{\cancel{4}}.\frac{\cancel{4}}{\cancel{5}}.\frac{\cancel{5}}{\cancel{6}}\cdots\frac{\cancel{29}}{30}\right).\left(\frac{\cancel{5}}{4}.\frac{\cancel{6}}{\cancel{5}}.\frac{\cancel{7}}{\cancel{6}}\cdots\frac{31}{\cancel{30}}\right)$$

$$= \frac{\cancel{3}}{\cancel{30}_{10}}.\frac{31}{4} = \frac{31}{40}$$

46) $\prod_{k=-7}^{103} \log_{(k+12)}(k+8) = ?$

Çözüm: $\underbrace{\log_5 1}_{0}\cdots = 0$

47) $\prod_{p=2}^{63} \log_p(p+1) = ?$

Çözüm:

$$\prod_{p=2}^{63} \frac{\log(p+1)}{\log p} = \frac{\cancel{\log 3}}{\log 2}.\frac{\cancel{\log 4}}{\cancel{\log 3}}\cdots\frac{\log 64}{\cancel{\log 63}}$$

$$= \frac{\log 64}{\log 2} = \frac{\log 2^6}{\log 2} = \frac{6\cancel{\log 2}}{\cancel{\log 2}} = 6$$

48) $\prod_{a=1}^{30} 3.a^4 = ?$

Çözüm:

$$3^{30}.\prod_{a=1}^{30} a^4 = 3^{30}.1^4.2^4.3^4\ldots 30^4$$

$$= 3^{30}.(1.2.3\ldots30)^4 = 3^{30}.(30!)^4$$

49) $\prod_{k=1}^{50} k^3.3^k = ?$

Çözüm:

$$\prod_{k=1}^{50} k^3.3^k = 1^3.2^3\ldots50^3.3^1.3^2.3^3\ldots3^{50}$$

$$= (50!)^3.3^{\frac{50.51}{2}} = (50!)^3.3^{1275}$$